REMARKS

Applicants appreciate the indication that claim 7 has been allowed. In response thereto, claim 7 is proposed to be placed in independent form, as shown above. Insofar as this is in accordance with the Examiner's suggestion, entry of the amendment is deemed proper.

Applicants also appreciate withdrawal of the rejections based on prior art. However, the Office continues to have a concern about whether the present application is enabling. Specifically, the Office Action includes a rejection of claims 1, 3, 6 and 8 through 11 under 35 U.S.C. §112, first paragraph, suggesting that the specification does not enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with the claims. More specifically, the Office suggests that the "instant disclosure fails to teach the ordinary skill worker in the art how to make and use the myriad possibilities which would fulfill the thickness in the range where the ratio of ***perpendicular coercivity-to-maximum perpendicular coercivity*** of the perpendicular magnetic recording layer, as claimed, without undue experimentation in the unpredictable magnetic recording disk art. The Office suggests that Applicants have only provided one composition along with close proximity thickness and therefore deems the specification to be "exceedingly narrow compared with the myriad possibilities fulfilling the size and component possibilities within the ratio claimed." The Office concludes that it would take more than routine experimentation "[to identify?] the numerous other possible combinations and permutations encompassed."

Applicants respectfully traverse the factual basis and the conclusions drawn with respect to this rejection.

First, it may be useful to summarize what is not contested. It is assumed that the Office does not have any difficulty with the concept that measuring both perpendicular coercivity *Hc* and maximum perpendicular coercivity *Ho* are well within the skill set of the ordinary artisan. It is also assumed that the Office has no difficulty with the concept that measuring thickness of a perpendicular magnetic recording layer is well within the skill set of an ordinary artisan. Hence, it is not the measurements of coercivity or thickness that constitutes any form of undue experimentation in the Office's view.

Further, it should be recognized that the claim defines a perpendicular magnetic recording disk as including an underlayer between a substrate and a perpendicular magnetic recording layer where the underlayer induces a perpendicular orientation of the perpendicular magnetic recording layer. It further includes an intermediate soft magnetic layer between the underlayer and the perpendicular recording layer for forming closed magnetic loops together with the perpendicular magnetic recording layer. Hence, the structure of the perpendicular magnetic recording disk is well defined in the claims and constitutes a relatively narrow species among all the different types of magnetic recording disks. Hence, it is assumed that the Office does not suggest that finding the appropriate structure constitutes undue experimentation insofar as the structure is clearly articulated in the claims.

It appears from the commentary and the allowance of claim 7 that the Office is solely concerned with the possible number of materials that could be used, and that values for the perpendicular coercivity and the maximum perpendicular coercivity have not been provided for a large number of these materials in the "unpredictable magnetic recording disk art."

Having focused on the issue, Applicants respectfully submit that the Office may have missed the point of the invention. First, while the process of identifying materials that are appropriate for magnetic recording media can be empirical in its nature, the present invention does not require this process. In implementing the present invention, the ordinary skilled artisan would not be required to simply pull random elements off the periodic chart. Specifically, the present invention does not require an ordinary artisan to identify new materials that are suitable for magnetic recording disks. Instead, the claim language in question is a "perpendicular magnetic recording layer having a thickness in a range where the ratio of perpendicular coercivity *Hc* to maximum perpendicular coercivity *Ho* decreases with reduced thickness of the perpendicular magnetic recording layer." This relationship is shown in Figures 4 and 6, for instance, of the present application and, the skilled artisan having suitable materials for perpendicular magnetic recording layer in hand, can determine the recited ratio is a matter of very routine experimentation. Stated differently, the present invention involves a process of determining a thickness of a material useable in a particular memory structure. It does not require any of the unpredictable aspects of the magnetic recording arts.

There is currently a limited number of materials that have been identified as suitable for magnetic recording layer in the recited structure. The example used in the specification for illustrating the invention is CoCr alloy. However, skilled artisans would recognize that other materials can be used as a perpendicular recording medium. For instance, the Hikosaka et al. patent (U.S. Patent No. 5,942,342) identifies perpendicular magnetization films of CoPt-based alloy and a compound phase of material selected fro the group consisting of Co oxide, Co nitride and Co carbide. The basic point, however, is one skilled in the art, having identified a suitable material, can implement the present invention with ease.

Applicants note that the present invention involves Applicant's discovery that:

> Decreases in domain diameter observed at a magnetic recording layer thickness smaller than the thickness at which the perpendicular coercivity *Hc* starts to decrease. Apparently, micro-domains can be formed at a reduced thickness of the magnetic recording layer. Also, the formation of micro-domain in the magnetic recording layer can induce a sharp reduction of the noise level constant of proportionality α, as shown in Figure 5. Page 8, lines 5-11, of the present specification.

Applicants discovered this effect despite conventional beliefs that noise in PMR disks can be reduced by increasing the thickness of the PMR layer. The results of one such set of measurements is shown in Figures 4 and 6 which is a smooth graph suggesting that the ratio of *Hc* to *Ho* is not unpredictable.

It is hoped that with the foregoing explanation, the Office will understand that the present invention does not involve undue experimentation, but rather routine experimentation on a subset of materials useful in a narrow species of perpendicular magnetic recording disks of a particular structure. What was unpredictable was

Applicant's discovery that decreases in domain diameter result at a magnetic recording layer thickness small than the thickness at which the perpendicular coercivity *Hc* starts to decrease and that, apparently, micro-domains can be formed at reduced thickness of the magnetic recording layer. Applicants also discovered that the formation of apparent micro-domains in the magnetic recording layer can induce a sharp reduction in noise level constant of proportionality α, as shown in Figure 5. This is in contrast to the conventional belief that noise in PMR disks can be reduced by increasing the thickness of the PMR layer. By providing this unexpected discovery, skilled artisans can implement the invention in a variety of materials of their choosing.

In light of the foregoing, Applicants respectfully request reconsideration and allowance of the above-captioned application.

Respectfully submitted,

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